Pavilion Lake, B.C., Canada – Investigating Microbialite Morphogenesis

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Pavillion Lake is 5.7km long and an average of 0.8 km in width, and is located in Marble Canyon in the interior of British Columbia, Canada. The basin walls of Pavilion Lake are lined with microbialite structures that are found from depths of 5 meters to approximately 30 meters. Here we present our on-going research into Pavilion Lake: a combination of hypothesis and exploration driven research to study the lake's unusual freshwater microbialite structures.

The foundation for this study is the seminal work by Laval et al. (2000), which provides an overview of the morphological characteristics of the microbialites, and explores the physical limnology of Pavilion Lake. Several key hypotheses and questions related to the role of biology in the formation of the microbialites, and the effect of varying light levels on the microbialite morphologies have since resulted from Laval et al. (2000), but to date remain untested and unanswered. We are currently revisiting Pavilion Lake to test hypotheses concerning the geobiological factors affecting the microbialite formation, and to collect further exploration data related to understanding the lake's structure and development. In particular, we are (1) investigating the hypothesized biological origins of the microbialites and the controlling input of PAR on their morphological variation, (2) exploring the physical and chemical limnological properties of the lake, especially as

these characteristics pertain to microbialite formation and (3) determining the spectral (visible to thermal infrared) and erosional properties of the carbonates.